United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Energy and Air Quality
Committee on Energy and Commerce
House of Representatives

For Release on Delivery
Expected at 2:00 p.m. EST,
Tuesday, March 19, 2002

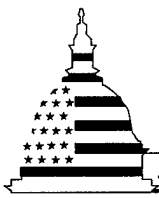
PIPELINE SAFETY

Status of Improving Oversight of the Pipeline Industry

Statement of Peter F. Guerrero
Director, Physical Infrastructure Issues

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

20020320 175



G A O
Accountability * Integrity * Reliability

Mr. Chairman and Members of the Subcommittee:

We appreciate this opportunity to testify on the Office of Pipeline Safety's (OPS) oversight of the safety of our nation's pipeline infrastructure. Our statement is based on reports we issued in May 2000 and September 2001, as well as ongoing work for Mr. Dingell of this Subcommittee.[1]

OPS oversees the safety of 2.2 million miles of pipelines that transport potentially dangerous materials, such as oil and natural gas. Historically, OPS has been slow to take action to improve its oversight of the pipeline industry and implement critical pipeline safety improvements. As a result, OPS has the lowest implementation rate of any transportation agency for recommendations from the National Transportation Safety Board (the Safety Board). This lack of responsiveness has prompted Congress to repeatedly mandate basic elements of a pipeline safety program, such as requirements to periodically inspect pipelines. In recent years, OPS has initiated several actions to improve its oversight of the pipeline industry, including requiring "integrity management" programs for individual operators to assess their pipelines for risks, take action to mitigate the risks, and develop program performance measures. We are here today to discuss (1) OPS' progress in implementing integrity management and other initiatives, (2) OPS' progress in responding to recommendations from the Safety Board and statutory requirements, and (3) issues that are critical to the future success of OPS' initiatives to improve the safety and oversight of the pipeline industry.

In summary:

OPS has moved forward with its new risk-based regulatory approach—integrity management—that requires operators to develop programs that focus on the greatest risks to their pipelines. This approach differs significantly from its traditional approach of inspecting pipelines for compliance with uniform regulations establishing minimum standards. OPS plans to review and monitor these programs, which will be unique for each of more than 400 hazardous liquid and natural gas transmission operators. OPS has issued final rules requiring the phased implementation

[1]U.S. General Accounting Office, *Pipeline Safety: The Office of Pipeline Safety Is Changing How It Oversees the Pipeline Industry*, GAO/RCED-00-128 (Washington, D.C: May 15, 2000) and *Pipeline Safety: Progress Made, but Significant Requirements and Recommendations Not Yet Complete*, GAO-01-1075 (Washington, D.C.: September 28, 2001).

of these programs for operators of hazardous liquid pipelines. The agency also plans to issue a final rule for operators of natural gas transmission pipelines by the end of 2002.

OPS has also made progress on other initiatives that are intended to improve the agency's oversight of the pipeline industry. These initiatives include:

- Revising forms and procedures to collect more complete and accurate data, which will enable OPS to better assess the causes of incidents and focus on the greatest risks to pipelines. According to the Safety Board and industry associations, these actions address the underlying problems with OPS' data, such as limited data on the causes of incidents. OPS hopes to implement most of its initiatives to improve data in 2002. However, according to industry associations, it may be several years before OPS has sufficient data to thoroughly evaluate industry trends, especially for hazardous liquid pipelines.
- Allowing more states to oversee a broader range of interstate pipeline safety activities. State pipeline safety inspectors are an invaluable resource for OPS because they are familiar with pipeline safety issues unique to their states. OPS responded to our May 2000 recommendations that the agency better utilize this resource by allowing states to participate in a wider range of oversight activities, such as reviewing integrity management programs for pipelines in their individual states.
- Increasing the use of fines, thereby reversing OPS' former trend of relying more heavily on less severe corrective actions. From 1990 through 1998, OPS decreased the number and amount of fines while increasing the use of less severe corrective actions, such as letters of concern. We questioned this change in OPS' enforcement policy and recommended in May 2000 that the agency determine the impact of the reduced use of fines on safety. According to OPS officials, the agency is not able to determine this impact as we recommended because it does not have sufficient data to link its compliance actions with improvements in safety. Nevertheless, OPS determined that its enforcement policy was perceived negatively and did not adequately address safety concerns. OPS subsequently changed its enforcement policy to make better use of its full range of enforcement tools, including increasing the number and severity of fines. According to OPS officials, the agency plans to collect data that will allow it to link its compliance actions with improvements in safety. We are evaluating OPS' response to our recommendation.

OPS has made progress in responding to recommendations from the Safety Board and statutory requirements, but still has not implemented

some significant recommendations and requirements. In May 2000, we reported that OPS had the lowest rate of any transportation agency in responding to recommendations from the Safety Board and had not completed 22 out of 49 statutory requirements imposed since 1988. OPS has since improved its responsiveness to the Safety Board's recommendations and taken action on eight statutory requirements. However, some recommendations and requirements dealing with issues that are critical for pipeline safety—such as requiring pipeline operators to periodically inspect their pipelines—are more than a decade old and OPS still has not implemented them. According to OPS officials, the agency's ongoing initiatives should fulfill the majority of the open recommendations and requirements before the end of 2002.

OPS faces major challenges in implementing its initiatives and in fulfilling the Safety Board's recommendations and statutory requirements. These challenges include (1) developing performance measures for the integrity management approach, (2) ensuring sufficient resources and expertise to oversee operators' integrity management programs, (3) providing consistent and effective enforcement of integrity management program requirements, and (4) issuing requirements for integrity management programs for operators of gas transmission pipelines. We are reviewing these issues as part of our ongoing work, and will address them in our final report.

Background

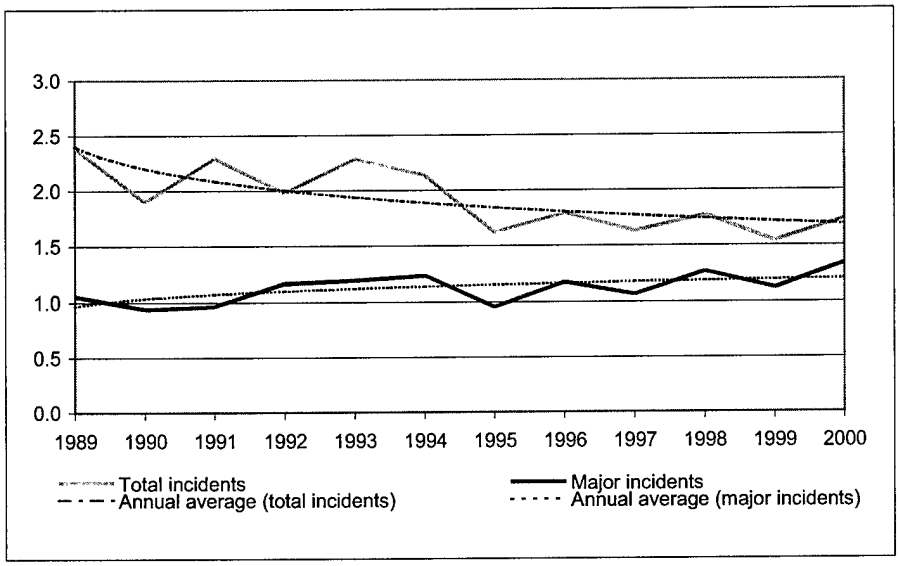
OPS regulates the safety of almost 2.2 million miles of pipelines, which is enough to circle the earth 88 times. There are three primary types of pipelines under OPS' jurisdiction. Natural gas transmission pipelines—about 322,000 miles—transport natural gas over long distances from sources to communities. An additional 1.7 million miles of natural gas distribution pipelines continue transporting the gas throughout the communities to consumers. Finally, about 155,000 miles of hazardous liquid pipelines generally transport crude oil to refineries and continue to transport the refined oil product, such as gasoline, to product terminals and airports.

These pipelines transport the bulk of natural gas and petroleum products in the United States and are the safest mode for transporting these potentially dangerous commodities. Although pipeline incidents resulted in an average of about 24 fatalities per year from 1989 to 2000, the number of pipeline incidents is relatively low when compared with those involving other forms of freight transportation. On average, about 66 people die each year in barge accidents, about 590 in railroad accidents, and about 5,100 in

truck accidents. Despite the relative safety of pipelines, pipeline incidents can have tragic consequences, as evidenced by the incidents at Bellingham, WA, and Carlsbad, NM. These incidents, which caused 15 fatalities, highlighted the importance of pipeline safety and the need for more effective oversight by OPS.

From 1989 through 2000, the total number of incidents per 10,000 miles of pipeline decreased by 2.9 percent annually, while the number of major pipeline incidents (those resulting in a fatality, an injury, or property damage of $50,000 or more) per 10,000 miles of pipeline increased by 2.2 percent annually. (See fig. 1.) Over the same time period, pipeline mileage increased 1.6 percent annually from 1.9 to 2.2 million miles of pipelines.

Figure 1: Major and Total Incidents per 10,000 Miles of Pipeline



Source: GAO's analysis of OPS data.

Traditionally, OPS carried out its oversight responsibility by requiring all pipeline operators to comply with uniform, minimum standards. Recognizing that pipeline operators face different risks depending on such factors as location and the product they carry, OPS began exploring the concept of a risk-based approach to pipeline safety in the mid-1990s. In 1996, the Accountable Pipeline Safety and Partnership Act directed OPS to establish a demonstration program to test a risk-based approach. The Risk Management Demonstration Program went beyond OPS' traditional

regulatory approach by allowing individual companies to identify and focus on risks to their pipelines. Since the program's initiation in 1997, OPS has approved six demonstration projects.

OPS Has Made Progress in Implementing Integrity Management Programs and Other Initiatives

Partly on the basis of OPS' experience with the Risk Management Demonstration Program, the agency has moved forward with a new regulatory approach that requires pipeline operators to comprehensively identify and address risks to the segments of their pipelines that are located in "high consequence areas" where a leak or rupture would have the greatest impact. [2] This approach requires individual pipeline operators to develop and follow an integrity management program. Each program must contain specific elements, including a baseline assessment of all pipelines that could affect high consequence areas, periodic reassessment of these pipeline segments, prompt action to address any problems identified in the assessments, and measures of the program's effectiveness.

Although OPS has issued final rules requiring integrity management programs for operators of hazardous liquid pipelines, the agency has not issued a proposed rule for operators of gas transmission pipelines. In December 2000, OPS issued a final rule for operators of "large" hazardous liquid pipelines, defined as pipeline systems of at least 500 miles. Under this rule, individual operators were required by December 31, 2001 to identify pipeline segments that can affect high consequence areas, and then develop a framework for their integrity management program and a plan for conducting baseline assessments by March 31, 2002. OPS issued a similar rule for operators of "small" hazardous liquid pipelines that are less than 500 miles long on January 16, 2002, with later deadlines. For natural gas transmission pipelines, OPS anticipates issuing a final rule in fall 2002.[3]

OPS plans to review and monitor operators' programs for compliance with the integrity management requirements, but will not formally approve operator programs. OPS is currently in the first of a four-phase plan for reviewing and monitoring integrity management programs for operators of

[2]For hazardous liquid pipelines, a high consequence area is defined as a populated area, an environmentally sensitive area, or a commercially navigable waterway. For natural gas transmission pipelines, OPS is developing a definition that focuses on populated areas.

[3]OPS issued a proposed rule to define high consequence areas for natural gas transmission pipelines on January 9, 2002.

large hazardous liquid pipelines. [4] In phase 1—scheduled to be completed by the end of April 2002—OPS is reviewing operators' identification of pipeline segments that impact high consequence areas. During phase 2—from July 2002 to July 2004—OPS will inspect the more fully developed framework and assessment plans. After July 2004, OPS plans to monitor operators' implementation of their individual programs through periodic inspections in phase 3, and review and respond to notifications from operators of changes in their programs in phase 4.

OPS is hiring and training additional inspectors to review and monitor operators' programs. OPS had 56 inspectors in fiscal year 2001 and plans to hire an additional 30 inspectors—a 54-percent increase—by the end of fiscal year 2003. OPS plans to augment its inspection force with contractor and state support as it develops the necessary expertise to review and monitor operators' programs. OPS has also developed a list of training courses that will be required for federal and state inspectors, and it is currently scheduling this training. OPS officials anticipate that it will take about 2 years to provide this training to all federal and state inspectors.

In addition to the integrity management programs, OPS is making progress on other initiatives for improving data, involving states, and increasing the use of fines. These initiatives are intended to improve pipeline safety and the agency's oversight.

OPS Is Taking Action to Improve Data

DOT's Inspector General, the National Transportation Safety Board, and others have reported that OPS' data on pipeline incidents and infrastructure are limited and sometimes inaccurate. For example, in the past, OPS' incident report forms have used only five categories of causes for incidents on natural gas distribution pipelines, four categories for those on natural gas transmission pipelines, and seven categories for those on hazardous liquid pipelines. As a result, about one-fourth of all pipeline incidents were attributed to "other causes," which limited OPS' ability to identify and focus on the causes of incidents. In addition, data on the amount of pipeline mileage in various infrastructure categories (such as age or size) are necessary for a meaningful comparison of the safety performance of individual pipeline companies. OPS did not require

[4] OPS anticipates following a similar process to review and monitor integrity management programs developed by operators of small hazardous liquid and natural gas transmission pipelines.

hazardous liquid pipeline operators to submit this type of data and did not collect complete data from natural gas pipelines. Finally, the information on incident reports filed by operators sometimes changes as the incident investigation proceeds. OPS did not have a procedure for ensuring that operators submitted revised reports when needed.

OPS is taking action to collect data that will allow it to more accurately determine the causes of incidents, analyze industry trends, and compare the safety performance of operators. For example, OPS revised its incident report forms in 2001 for hazardous liquid and natural gas transmission incidents to include 25 categories of causes and plans to revise the form for natural gas distribution incidents by the end of 2002. Furthermore, OPS is assigning an inspector in each region to review incident report forms for completeness and accuracy, and has instituted new electronic notification procedures to ensure that operators submit revised incident reports, if necessary. OPS also plans to institute annual reports for hazardous liquid pipeline operators, and is in the process of revising annual report forms for all natural gas pipeline operators. Finally, OPS is conducting studies of incident information to improve its understanding of the causes of incidents. According to OPS officials, most of these improvements will be implemented for 2002 data.

According to the Safety Board and industry groups, OPS' initiatives address the underlying data problems and will enable OPS to better understand the causes of incidents so the agency can focus its efforts to improve safety. However, officials from industry groups told us that it will be several years before OPS has sufficient data to analyze trends in incidents. Officials from the Safety Board also noted that these initiatives are merely a first step, and they emphasized that OPS should periodically reassess its forms and procedures and take steps to revise them as necessary. We are evaluating OPS' data improvement initiatives as part of our ongoing work.

States Are Taking a Greater Role in Overseeing Interstate Pipeline Safety Activities

OPS is allowing more states to help oversee a broader range of interstate pipeline safety activities. Although OPS relies heavily on state inspectors to oversee intrastate pipelines, it reduced its reliance on states to inspect interstate pipelines in the mid-1990s when it moved to a more risk-based, system-wide approach to inspecting pipelines. At that time, OPS believed it would be too difficult to coordinate participation by individual states in the new inspection process. However, in our May 2000 report, we found that allowing states to participate in interstate pipeline safety inspections could improve pipeline safety by increasing the frequency and

thoroughness of inspections to detect safety problems. Additionally, state pipeline safety inspectors are likely to be familiar with pipelines in their jurisdictions and the potential risks faced by these pipelines. We recommended that OPS work with state pipeline safety officials to determine which activities would benefit from state participation and, for states that are willing to participate, integrate their activities into the safety program. We also recommended that OPS allow state inspectors to assist in reviewing the integrity management programs developed by the companies that operate in their states to help ensure that these companies have identified and adequately addressed safety risks to their systems.

OPS responded to our recommendations in 2001 by encouraging more states to oversee the safety of interstate pipelines in their states. These states may perform a broad range of oversight activities, such as inspections of new construction, oversight of rehabilitation projects and integrity management programs, incident investigation, standard inspections, and participation in nonregulatory program initiatives. Other states that want to participate on a smaller scale may apply for specific, short-term projects, such as inspecting new pipeline construction projects. As of January 2002, 11 states—up from 8 in 2000—have been approved to participate in all oversight activities, and an additional 4 states have been approved to participate on short-term projects.[5]

OPS Is Increasing its Use of Fines

OPS is increasing its use of fines for safety violations, thereby reversing a trend of relying more heavily on less severe corrective actions. From 1990 to 1998, OPS decreased the proportion of enforcement actions in which it proposed fines from about 49 percent to about 4 percent. During this time, the agency increased the proportion of warning letters and letters of concern from about 33 percent to about 68 percent. OPS made this change in order to place more emphasis on "partnering" to improve pipeline safety rather than on punishing noncompliance. As of May 2000, OPS could not determine whether this approach was effective in maintaining compliance with safety regulations. Consequently, we recommended that DOT determine whether OPS' reduced use of fines had maintained, improved, or decreased compliance with pipeline safety regulations.

[5]Arizona, California, Connecticut, Iowa, Michigan, Minnesota, New York, Ohio, Virginia, West Virginia, and Washington.

According to OPS officials, the agency is not able to determine the impact of its compliance actions on safety as we recommended because it does not have sufficient data. Nevertheless, OPS concluded that its decreased reliance on fines was perceived negatively by the public and Congress, and that the letters of concern did not allow OPS to adequately address safety concerns. OPS subsequently changed its enforcement policy to make better use of its full range of enforcement tools, including increasing the number and severity of fines. According to OPS officials, the agency plans to collect data that will allow it to link its compliance actions with improvements in safety. We will follow up on OPS' progress in this area during our current review.

OPS Has Not Implemented Significant Safety Board Recommendations and Statutory Requirements

OPS is taking action on open recommendations from the Safety Board and statutory requirements, but has still not implemented important recommendations and requirements. In May 2000, we reported that OPS historically had the worst response rate—about 69 percent—of any transportation agency to Safety Board recommendations. These recommendations dealt with a variety of issues that are critical for pipeline safety, such as requiring operators to periodically inspect pipelines and install valves to shut down the pipeline in an emergency. Some of these recommendations were more than a decade old. OPS has been working to improve its responsiveness over the last several years by initiating activities in response to the recommendations and improving communications with the Safety Board. The Safety Board has been encouraged by OPS' efforts to improve its responsiveness, particularly in the areas of excavation damage, corrosion control, and data quality. However, the Safety Board remains concerned about the amount of time OPS has been taking to implement recommendations. As of February 2002, OPS had not implemented 42 recommendations, several of which date from the late 1980s and deal with issues considered critical to pipeline safety, such as requiring operators to inspect their pipelines.

OPS maintains that its progress is better than the Safety Board indicates. According to OPS officials, the majority of the recommendations deal with integrity management and excavation damage prevention, which the agency's ongoing initiatives should fulfill before the end of 2002.

We also reported in May 2000 that OPS had not implemented 22 out of 49 statutory requirements that were designed to improve pipeline safety. Similar to the open Safety Board recommendations, several of these unfulfilled requirements dated from the late 1980s and early 1990s and were related to important pipeline safety issues, such as internal

inspections and identification of pipelines in populated or environmentally sensitive areas. Since May 2000, OPS has been working to complete these requirements. As of February 2002, 8 of the 22 requirements were closed as a result of OPS' actions, 9 requirements were still open, and the remaining 5 were reclassified as "closed" because OPS considered them to be superseded by amendments or other requirements or because the agency did not believe it was required to take further action. OPS plans to fulfill the majority of the open requirements before the end of 2002.

OPS Faces Major Challenges in Implementing its Initiatives

In our ongoing work, we are examining several issues that could affect OPS' ability to implement its integrity management and data improvement initiatives and, ultimately, fulfill the Safety Board's recommendations and statutory requirements. These issues include (1) performance measures for the integrity management approach, (2) sufficient resources and expertise to oversee operators' integrity management programs, (3) consistent and effective enforcement of integrity management program requirements, and (4) requirements for integrity management programs for operators of gas transmission pipelines.

Performance measures: In May 2000, we reported that OPS had not developed programwide performance measures for the Risk Management Demonstration Program, even though the act required such measures to demonstrate the safety benefits of the program. OPS still has not developed such measures. Despite the lack of quantifiable performance measures for the demonstration program, OPS moved forward with integrity management programs and faces the challenge of developing performance measures for this new approach to regulating pipeline safety. Such measures are essential to determine whether the new approach is successful and what improvements may be needed. However, OPS does not have a complete and viable database of information on pipeline incidents and an inventory of pipeline infrastructure on which to establish certain performance measures. OPS has taken steps to improve its data, but it may be several years before the agency can accumulate sufficient data to evaluate trends in the pipeline industry.

Resources and expertise: Pipeline operators are in the best position to develop integrity management programs that are tailored to their pipelines; however, it is critical for OPS to have adequate resources and expertise to oversee the programs. After OPS issues a final rule on integrity management programs for natural gas transmission pipelines, the agency estimates that there will be more than 400 hazardous liquid and natural gas pipeline operators with individual programs in various stages

of development. OPS must ensure that it has a sufficient number of inspectors to oversee these programs while maintaining its other oversight responsibilities. Moreover, while OPS has resolved to include states in reviewing and monitoring operators' programs, the agency faces a challenge to determine how best to leverage federal and state resources and provide training to state inspectors.

Furthermore, OPS' integrity management initiative represents a fundamental shift in how it oversees the pipeline industry. Federal and state inspectors that are accustomed to using a checklist approach for inspecting pipelines for compliance with uniform regulations will have to be trained to evaluate programs that are unique to individual operators. For example, under the new requirements, operators may use a variety of inspection techniques to assess the safety of their pipelines. Inspectors must be familiar with all of these inspection techniques, know when it is appropriate to use them, and know how to interpret the results.

Enforcement: The variability of individual operator programs will make it difficult for OPS to enforce the requirements of the integrity management program. OPS' integrity management requirements for hazardous liquid pipelines allow pipeline operators flexibility to design and implement integrity management programs based on pipeline-specific conditions and risks.[6] However, this flexibility will result in unique programs for each operator and require more judgment on the part of inspectors. To ensure that the program requirements are consistently and effectively enforced, OPS is developing a comprehensive set of inspection protocols that are intended to provide clear criteria to inspector staff for evaluating the adequacy of operator actions and making enforcement decisions. As noted previously, OPS believes its staff will need increased training and expertise to make these types of judgments.

Final rule for natural gas transmission pipelines: OPS has issued the final rules requiring integrity management programs for operators of hazardous liquid pipelines; however, significant differences between natural gas transmission pipelines and hazardous liquid pipelines present challenges for OPS in developing a similar rule for operators of natural gas transmission pipelines. For example, to facilitate the movement of natural gas under pressure, transmission pipelines tend to vary more in diameter

[6]Pipeline operators must also maintain compliance with uniform regulations establishing minimum safety requirements.

than hazardous liquid pipelines. These variations make it more difficult for natural gas transmission pipelines to accommodate internal inspection devices. The Interstate Natural Gas Association of America estimates that about 45 percent, or about 145,000 miles, of natural gas transmission pipelines would require alternative inspection methods because modifying the pipelines to accommodate internal inspection devices would not be feasible. OPS plans to identify alternative inspection methods that would be effective in assessing the integrity of these pipelines. OPS has 8 months to resolve this issue if it is to meet the goal of issuing a final rule by the end of 2002.

Observations

We are encouraged by OPS' recent efforts to improve its oversight of pipeline safety and believe they are steps in the right direction. However, a number of challenges remain. These challenges include developing performance measures for the integrity management approach, ensuring sufficient resources and expertise to oversee operators' integrity management programs, providing consistent and effective enforcement of integrity management program requirements, and issuing requirements for integrity management programs for operators of gas transmission pipelines. It is imperative for OPS to meet these challenges to ensure the safety of the nation's pipelines.

Mr. Chairman, this concludes my testimony. I would be pleased to answer any questions you or Members of the Subcommittee may have.

Contacts and Acknowledgments

For information about this testimony, please contact Peter F. Guerrero at (202) 512-4907 or guerrerop@gao.gov. This statement is available on GAO's home page at http://www.gao.gov. Individuals making key contributions to this testimony were Helen Desaulniers, Susan Fleming, Judy Guilliams-Tapia, Michael Horton, Wyatt Hundrup, and Sara Vermillion.